Abstract

Title: Case study of walk and run kinematics involution

Objectives: Identify differences in the execution of walk and run, their time and space parameters, by two couples in close family relationship (father and son; father and daughter), who participate in the performance sport of running.

Methods: Two family couples (3 men and one woman) participated to laboratory and field tests. Each subject participated in two kind of walk (walk on treadmill at the speed of 5km/h and walk on the athletic track – at natural walking speed) and according the abilities to 15 speeds of running locomotion (13 speeds on treadmill and 2 speeds on the athletic track). Kinematics of all speeds was analysed with the software Kinovea 0.8.15. The thesis is a pilot study, that is trying to ascertain the extend of difference of the execution of locomotion of subjects in the male parental line (father and son; father and daughter).

Results: Noticeable difference in the characteristics of all measured speeds of locomotion are seen by the older two members of relatives (74,8 and 40,2 years), the faster was the evaluated speed, the larger was the difference in stride length (6 to 25 cm) and in stride frequency in walking as well as in running (23 to 38 steps per minute). For the second tested two members of a family (53,7 and 30,5 years) were identified no such significant differences in walking and running characteristics, stride length was not by all observed speeds of locomotion longer by the younger daughter nor the frequency of running was lower as expected by the daughter.

Keywords: kinematics, biomechanics, run, walk, old age, movement control, performance sport, locomotion